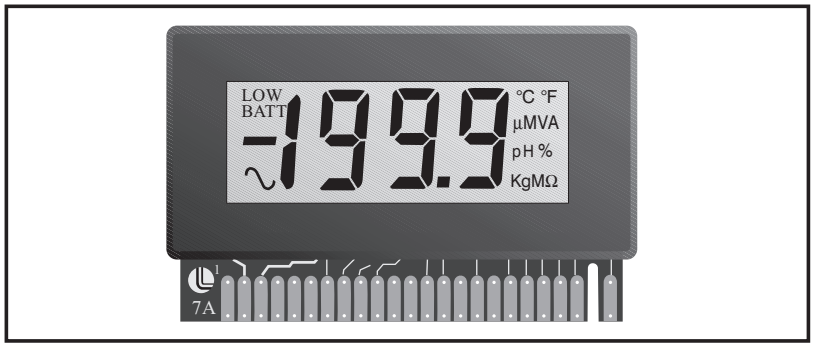
DPM 200

3½ Digit LCD Module

The DPM 200 uses advanced components and construction techniques to provide an unrivalled combination of high performance, elegant appearance and low cost. The module uses a bandgap reference for extra temperature stability. For single rail use, the DPM 200S features a built in negative rail generator, enabling the meter to measure a signal referenced to its own power supply 0V.

- **15mm (0.6“) Digit Height**
- **Programmable Decimal Points**
- **Auto-zero**
- **Auto-polarity**
- **200mV d.c. Full Scale Reading (F.S.R.)**
- **Single Rail Version**
- **Autoranging Outputs**



SCALING

Two resistors Ra and Rb may be fitted in order to alter the full scale reading (F.S.R.) of the meter - see table.
The meter will need re-calibration.

Required F.S.R.		Ra	Rb
2V	Note	910k	100k
20V	Note	1M	10k
200V	Note	1M	1k
2kV	Note	1M	100R
200µA		0R	1k
2mA		0R	100R
20mA		0R	10R
200mA		0R	1R

NOTE
Ensure that Link 10 is open if fitting Ra.

Standard Meter Single Rail Version					Stock Number DPM 200 DPM 200S
Specification		**Min.**	**Typ.**	**Max.**	**Unit**
Accuracy (overall error) *			0.05	0.1	% (±1 count)
Linearity				±1	count
Sample rate			3		samples/sec
Operating temperature range		0		50	°C
Temperature stability			30		ppm/°C
Supply voltage (V+ to V-)	DPM 200	7.5	9	14	V
	DPM 200S	3.5	5	6.5	
Supply current	DPM 200		150		µA
	DPM 200S		500		
Input leakage reading (Vin = 0V)			1	10	pA

* To ensure maximum accuracy, re-calibrate periodically.

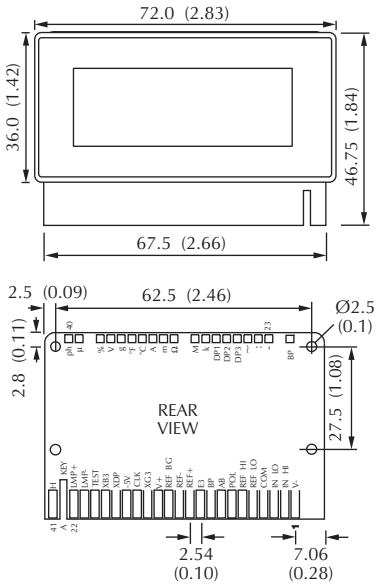
CONNECTOR SOURCING GUIDE

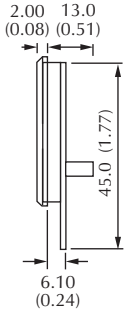
METHOD	
Solder	Solder wires or standard 0.1" square pin header to PCB
Edge Connector	LASCAR EC 24 DS

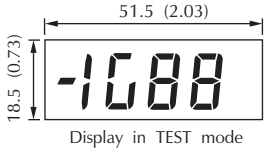
SAFETY

To comply with the Low Voltage Directive (LVD 93/68/EEC), input voltages to the module's pins must not exceed 60Vdc. If voltages to the measuring inputs do exceed 60Vdc, then fit scaling resistors externally to the module. The user must ensure that the incorporation of the DPM into the user's equipment conforms to the relevant sections of BS EN 61010 (Safety Requirements for Electrical Equipment for Measuring, Control and Laboratory Use).

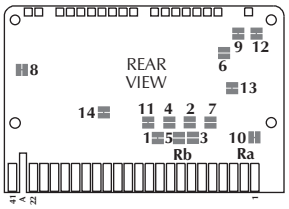
DIMENSIONS All dimensions in mm (inches)







Panel cut out 68 x 33 (2.68 x 1.30)



ON BOARD SOLDER LINKS

SCALING RESISTORS

PANEL FITTING

Locate the meter by passing it through the front of the panel cut-out and, using the four screws provided, fix the plastic spring clips to the rear of the meter.

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PIN FUNCTIONS

1. V- Negative power supply connection.
2. IN HI Positive measuring input. } Analogue inputs must be no closer than 1V to either the positive or negative supply. The negative
3. IN LO Negative measuring input. } supply of the DPM 200S is generated internally and mirrors the positive supply voltage.
4. COM Ground for the analogue section of the A/D converter. It is actively held at approximately 2.8V below V+ and must not be allowed to sink excessive current (>100µA) by, for instance, connecting to a higher voltage.
5. REF LO Negative input for reference voltage.
6. REF HI Positive input for reference voltage (connected via Link 1 to REF+).
7. POL Drive for negative polarity (-) annunciator. Internally connected via Link 11 to the annunciator.

8, 10, 15, 19 Outputs for auto-ranging applications.

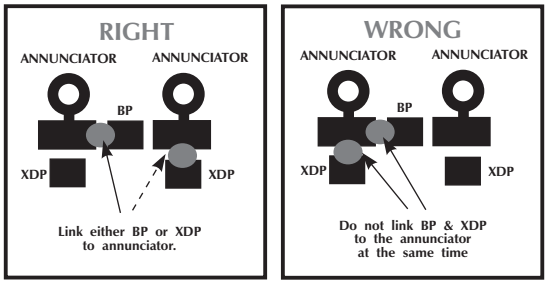
9. BP LCD backplane drive waveform.
11. REF+ Positive output from internal reference.
12. REF- Negative output from internal reference.
13. REF BG Output from bandgap reference (1.22V).
14. V+ Positive power supply connection.
16. CLOCK Clock output may be used for systems timing or as an input to override the internal oscillator and control the sample rate.
17. -5V Output from negative rail generator circuit. This is an inversion of V+ (DPM 200S only).
18. XDP Connect to required annunciators/DPs (see note). This is an inversion of BP.
20. TEST Connect to V+ to display segments as illustrated. It should not be operated for more than a few seconds as the DC Voltage applied to the LCD may 'burn' the display. This pin is normally at 5V below V+ and is the ground for the digital section of the meter. It can be used to power external logic up to a maximum of 1mA.
21. LMP- N.C.
22. LMP+ N.C.

A. KEY Polarising slot for edge connector.

41. H N.C.

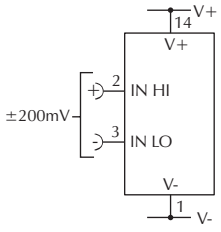
SPECIAL NOTE - ANNUNCIATORS.

The DPM annunciators (DPs, °C, etc.) can be displayed, either by connecting to XDP or by applying a solder link to the XDP pads located under the annunciator input pads. However, as these annunciators are normally 'floating', under certain conditions they may appear when not wanted. To suppress unwanted annunciators, apply a solder link to the backplane pads located in-between the annunciator input pads.
If the annunciators are being switched, connect them via a 1MΩ resistor to the BP (Pin 9), the annunciators will then operate normally when connected to XDP.
Ensure that an annunciator is not connected directly to the XDP and BP at the same time.
Note - if suppressing (-) annunciator by direct connection to BP, Link 11 MUST be cut first.

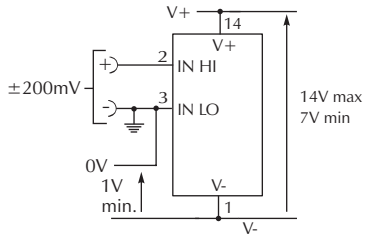


VARIOUS OPERATING MODES

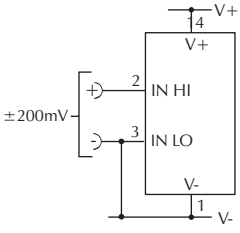
ON-BOARD LINKS: In order to quickly and easily change operating modes for different applications the meter has several on-board links. They are designed to be easily opened (cut) or shorted (soldered). Do not connect more than one meter to the same power supply if the meters cannot use the same signal ground.
Taking any input beyond the supply rails will damage the meter.



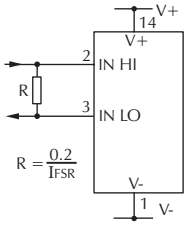
Check Links 2, 3 & 4 are SHORTED.
Measuring a floating voltage source of 200mV full scale



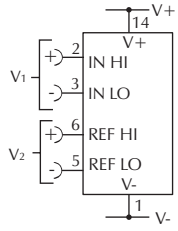
Check Links 3 & 4 are SHORTED.
Split supply operation (DPM 200).



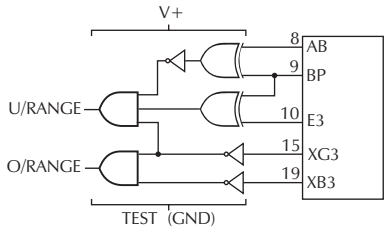
Check Links 3 & 4 are SHORTED.
Measuring a single ended input referenced to supply (DPM 200S).



Check Links 2, 3 & 4 are SHORTED.
Measuring current. Supply MUST be isolated.



Check Link 1 is OPEN.
Measuring the ratio of two voltages.
Reading = 1000 V_1/V_2
50mV< V_2<200mV
V_1<2V_2.



Generating basic Auto-ranging outputs.